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REMARKS

The claims have been amended to cancel Claims 20-26 which are the subject of a final restriction requirement. As such, this amendment after final should be entered.

Claims 1-2, 4-5 and 8 are rejected under 35 USC §103(a) as being unpatentable over Cordts (US 4,295,907) in view of Aiba (US 4,087,182) and Costello (US 5,180,611). The Examiner argues that Cordts teaches a process for making glass fiber reinforced laminates comprising the steps of applying an uncured gel coat to a nonporous mold, e.g., plastic film, and exposing the surface of the gel coat that is in contact with the mold and the second surface of the gel coat to actinic radiation. The Examiner states that Cordts is generic for the concept of placing UV lights above and below the gel coat. The Examiner recognizes that Cordts is silent regarding the arrangement of the respective actinic radiation sources but looks to Aiba and Costello for showing that a staggered arrangement is commonly employed when multiple radiation sources are provided above and below a given substrate. The Applicant traverses on the grounds that there is insufficient motivation to combine the references and, even if properly combinable, the references fail to teach all elements of the claimed invention.

First, the combined references fail to provide sufficient motivation to lead one skilled in the art to make the claimed invention. Specifically, in leading one skilled in the art, the prior art must suggest to the ordinary skilled artisan that the combination should be carried out and would have a reasonable likelihood of success, viewed in the light of the prior art. *In re Dow Chemical Co.*, 5 USPQ2d 1529, 1532 (Fed. Cir. 1988)(emphasis added). Indeed, both the suggestion and the expectation of success must be found in the prior art, not in the Applicant's disclosure. *Id.* Moreover, a prior art reference must be considered in its entirety with consideration given to disclosures that diverge or teach away from the invention at issue as well as disclosures which

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direct the skilled artisan to the invention. *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 300 (Fed. Cir. 1985). The Applicants believe that the Examiner's § 103 rejections fail to meet the above standards.

The primary reference, Cordts, fails to provide any motivation to lead one skilled in the art to practice bi-directional curing, much less such curing under conditions which will "establish a cure gradient in the uncured gel coat from the first [mold] surface to the second [open] surface". The mere four words ("...or in both locations...") that Cordts devotes to bi-directional curing do not state that bi-directional curing is used or even should be used, only that it could be used. At best, these four words indicate that the alternative locations would work but do not provide any reason to put UV lights both above and below the curing gel coat. Indeed, from the context of the disclosure, UV sources below, above or both are considered to be essentially interchangeable (see Column 5, lines 59-62), with no identified advantage to any of the choices. Specifically, nothing in Cordts even begins to suggest the benefits of establishing such a gradient, e.g., lower warpage, absence of alligatoring, improved gloss and/or porosity size reduction. However, an art-skilled person would recognize that dual UV light sources require more capital, operation and maintenance expenses. Because the disclosure of Cordts does not identify any advantages to a bi-directional cure, one skilled in the art would not be led to the conclusion that they should incur the additional costs. Equally important, Cordts is also silent on any motivation factors that would lead a skilled artisan to establish a cure gradient. Therefore, the primary reference, Cordts, does not provide the motivation required for a valid *prima facie* case.

The two secondary references, Aiba and Costello, either together or alone, fail to provide the motivation missing from Cordts. For example, Costello is a different principle of operation

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than the current invention. Costello is not a bi-directional cure, but rather teaches two nearly simultaneous mono-direction cures of coatings on opposite sides of a printed circuit with UV sources on each side. If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). Moreover, Costello fails to provide any teaching or suggestion as to the placement of actinic radiation sources for a bi-directional cure or, equally important, on establishing the cure gradient as stated in the claims. Maybe most important, Costello actually teaches away from sequential curing, i.e. curing one side before curing the other side. As stated in the Abstract, and numerous other places in the specification, Costello's invention is for "simultaneously irradiating both sides of a board...". Therefore, Costello is not properly combinable with Cordts, and would fail to advance the *prima facie* case even if it were combinable.

Likewise, Aiba does not provide the necessary motivation nor is properly combinable with Cordts. Again, the principle of operation in Aiba is different than Costello or the current invention. The purpose of the optional pre-exposure device of Aiba is to shorten the time required for the relief exposure by beginning the initiation at the opposite surface. See Column 8, lines 45-55. However, establishment of a cure gradient from one surface to the other is entirely contrary to the function and principle of Aiba. Aiba requires that the relief profile be determined and controlled solely by exposure through the image-bearing transparency. A cure gradient would cause curing in areas otherwise not exposed through the image which would deleteriously impact the final relief after dissolving the non-exposed polymer. If a proposed modification would render the prior art invention being modified unsatisfactory for its intended

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purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). Therefore, the combination of Aiba with Cordts (with or without Costello) fails to provide motivation to sequence the actinic radiation sources in order to establish a cure gradient and is also legally improper.

Against the lack of a suggestion of the desirability to use staggered sources for bi-directional curing, must be weighed the clear and explicit warning of Rahman (EP 660 148 A1) that such a staggered arrangement should not be used. The weight of all of the references would lead an art-skilled person to doubt the desirability of a staggered bi-directional cure and even to have reasonable doubt against the chance of success for such a process.

The lack of motivation, other than negative motivation, in the cited references to make the proposed combination clearly defeats the Examiner's *prima facie* case. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Nothing in the combined references suggests the desirability of a bi-directional cure process for gel coats, much less the desirability of staggering the radiation sources for such a bi-directional cure process, even less the desirability of operating such staggered radiation sources to "establish a cure gradient in the uncured gel coat from the first [mold] surface to the second [open] surface". Without the proper motivation, a §103 combination based on the mere existence of staggered radiation sources in the prior art is nothing more than an "Obvious-to-Try" rejection. And "Obvious-to-Try" is not a legally sufficient standard for §103 rejections.

Second, even if, *arguendo*, the Examiner still believes that the cited references are properly combinable, the *prima facie* case still fails because the references do not teach all

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elements of the claimed invention. In particular, none of the references teaches, or even suggests, a process to "establish a cure gradient in the uncured gel coat from the first [mold] surface to the second [open] surface". In the absence of express teaching of all elements, the *prima facie* case will fail unless the Examiner can establish the inherency of the missing element in the teaching of the prior art. Although the text and logic of the Examiner's rejection clearly show that he assumes that any sequential bi-directional cure will inherently establish a cure gradient from one surface to the other, he has failed to present any arguments, much less sufficient arguments, to that effect.

Under current patent laws, the inherency of an undisclosed element can only be established by showing that the inherency is necessary and inevitable and not merely possible or even probable. *Interchemical Corp. v. Watson*, 111 USPQ 78, 79(d) (D.C. 1956), *aff'd*, 116 USPQ 119 (D.C. Cir. 1958); MPEP §2112. In addition, inherency and obviousness are distinct concepts. *W.L. Gore & Assoc. v. Garlock, Inc.*, 220 USPQ 303, 314 (Fed. Cir. 1983). In order to establish a *prima facie* case of obviousness based on inherent properties, the Examiner must show that the undisclosed properties are not only inevitably and necessarily present, but also that the inherency of the undisclosed properties or elements is obvious to one skilled in the art. *Kloster Speedsteel AB v. Crucible Inc.*, 230 USPQ 81, 88 (Fed. Cir. 1986).

Not only has the Examiner not presented a sufficient case for inherency, but the very references cited by the Examiner defeat any attempt to do so. As stated above, the establishment of a cure gradient from one surface to the other in Aiba would prevent their process from achieving the desired results. Since Aiba presumably produces the results desired by those inventors, then the Aiba process must not form a cure gradient. As such, the mere staggering of UV light sources in a bi-directional cure process is shown not to necessarily and inevitably

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produce a cure gradient. At the very least, the inventors of Aiba, and anyone of skill in the art reading Aiba, would not consider that staggering the actinic radiation sources would obviously establish a cure gradient. Thus the Examiner has not shown the express disclosure of all claim elements in the prior art and cannot meet the standards for proving inherent disclosure.

Therefore, the *prima facie* case fails.

Third, the Examiner shortchanges the teaching in the disclosure. Comparing Example 1 and Example 2, curing from the top side only results in larger size porosity than curing from the bottom side only (0.3 mm vs. 0.2 mm, respectively). This result is not unexpected because, as explained in Paragraph 007, curing the top surface before the air bubbles can escape traps the bubbles and results in worse porosity in the fully cured gel coat. Now, in comparison, Example 3, where the gel coat is partially cured from the bottom to establish a cure gradient followed by a top cure, results in an unexpected synergistic improvement in porosity to only 0.1 mm in diameter. Obviously, such a synergistic improvement would not be achieved if the top side was cured first because the top side cure would still trap the air bubbles. Therefore, contrary to the Examiner's position, the data presented do establish the criticality of the claimed sequence.

Claim 3 is rejected under 35 USC §103(a) as obvious over Cordts, Aiba and Costello in view of Borrel (USP 3,655,483). Cordts, Aiba and Costello are applied as before, and Borrel is cited for the teaching that the carrier film or substrate support can be formed from a terephthalic polyester. Here again, however, this basis of rejection is in error because the combination of Cordts, Aiba, Costello and Borrel still is not proper and still does not teach bi-directional curing in which a cure gradient is established in the uncure gel coat.

Claims 6-7, 9-15 and 17-18 are rejected under 35 USC §103(a) as obvious over Cordts, Aiba and Costello in view of Russell (USP 4,338,269). Cordts, Aiba and Costello are applied as

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before, and Russell is cited for its teaching regarding the use of mercury vapor lamps as a preferred source of ultraviolet radiation. Here too, the combination of Cordts, Aiba, Costello and Russell fail to teach or provide incentive for bi-directional curing in a manner that establishes a cure gradient of the uncured gel coat from the casting film to the open environment.

Claim 34 is rejected under 35 USC §103(a) as obvious over Cordts, Aiba and Costello in view of Gupta. Cordts, Aiba and Costello are applied as before, and Gupta is applied for its teaching regarding the use of thermal energy to augment the ultraviolet light cure of the uncured gel coat. Again, this combination of references fails to teach the merits of a bi-directional cure in which a cure gradient is established in the uncured gel coat from casting film to the open environment.

Finally, Claims 1-9 and 16-19 are rejected under 35 USC §103(a) as obvious over Meoni (USP 4,734,143) in further view of Cordts, Aiba and Costello. The Examiner cites Meoni for the teaching of a method for forming a composite ribbon, the method comprising the steps of applying a gel coat to a mold or film, and then exposing the gel coat to actinic radiation in a polymerization tunnel. The Examiner acknowledges that Meoni fails to teach bi-directional curing, but cites to Cordts, Aiba and Costello for that teaching. As with the other combination of references, here too the references either alone or in combination with one another fail to teach bi-directional curing in which a cure gradient is established in the uncured gel coat from the casting film to the open environment. Not only is this teaching absent from these references, but so is any suggestion or incentive to employ a bi-directional cure.

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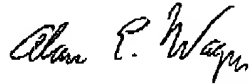
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The Examiner is respectfully requested to reconsider each and every basis of rejection, and then to withdraw each rejection and forward the application to issuance.

Respectfully submitted,



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